



Dart Hawkesbury
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D5425-043
Job Sheet 168536



U/R

OK
up
17/11/16

Part No: D5425-043

Job Qty: 1 ea

Part Name: Float Skidtube Assembly



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 11/16/17

Job Tracking No:

Due Date: 12/29/17

Created By: Mario Poulin

Type: ~~ACG~~ **SOLD**

Description:

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea		12/26/17	0.00	0.00	Start Up Skidtubes		
110	Skidtubes	1 pcs		12/27/17	0.00	8.24	Skidtubes		AP 2018-01-11
120	CNC Vertical Machining	1 pcs		12/28/17	0.00	22.77	HAAS 41-4		KT 18-01-18
130	QC	1 pcs		12/28/17	0.00	0.00	QC2		K4-18-01-18
140	QC	1 pcs		12/28/17	0.00	0.00	QC8		18/01/22
150	HandFinish	1 pcs		12/28/17	0.00	0.24	HandFinish1		2018/01/24 JSC
160	QC	1 pcs		12/28/17	0.00	0.00	QC7		
170	CNC Bend Skidtubes	1 pcs		12/28/17	0.00	2.63	CNC Bend Skidtube		
180	QC	1 pcs		12/28/17	0.00	0.00	QC5		
190	Skidtubes ★ PTD	1 pcs		12/28/17	0.00	8.24	Skidtubes		
200	QC	1 pcs		12/28/17	0.00	0.00	QC5		
210	HandFinish	1 pcs		12/28/17	0.00	0.24	HandFinish6		
220	QC	1 pcs		12/28/17	0.00	0.00	QC7		
230	Skidtubes	1 pcs		12/28/17	0.00	8.24	Skidtubes		
240	QC	1 pcs		12/28/17	0.00	0.00	QC5		
250	HandFinish	1 pcs		12/28/17	0.00	0.24	HandFinish6		
260	QC	1 pcs		12/28/17	0.00	0.00	QC7		
270	SprayPaint	1 pcs		12/28/17	0.00	0.00	Spray Paint		
280	QC	1 pcs		12/28/17	0.00	0.00	QC14		
290	HandFinish	1 pcs		12/29/17	0.00	0.24	HandFinish4		
300	QC	1 pcs		12/29/17	0.00	0.00	QC5		
310	Packaging	1 pcs		12/29/17	0.00	0.00	Packaging3		
320	QC21-SA	1 Ea		12/29/17	0.00	0.00	QC21		

Part Op 110 - 1-Cut tube to finished length as per Dwg. 2-Deburr ends as per Dwg.

Descriptions: 120 - 1-Machine as per Dwg. and Folio FB536 DWG REV: A FOLIO REV: 11A 2-Deburr as per Dwg.

150 - 1-Scrub inside of tube with medium scotchbright.

170 - 1-Bend Aft end of tube as per Dwg. and Folio _____. Insert Bending mandrel DT 10328 at _____" from aft end. Use buggy A,B,C AND DT _____ A & B. to stabilize tube. HEIGHT _____ 2-Bend Forward end of tube as per Dwg. and Folio _____. Insert Bending mandrel DT 10328 at _____" from fwd end. Use buggy A,B,C AND DT _____ A & B. To stabilize tube. HEIGHT _____ 3-Record dimensions on work order.

180 - #NAME?

190 - 1-Drill remaining holes of section I-I using DT _____ 2-Drill remaining holes of section J-J using DT _____ 3-Open holes to finished size as per Dwg. 4-Deburr holes per QSI002 section 4.2.3 and blow out all chips from inside of tube.

230 - 1-Wet install crossbolt spacers of Section G-G. Swage to 0.437 as per Dwg. PRIMER B _____ Start Time: _____ Finish Time: _____ ***CURE TIME _____ HRS. BEFORE PROCEEDING TO NEXT STEP***

2-Swage crossbolt spacers of Section F-F to 0.313 as per Dwg. 3-Trim / Grind flush, deburr. 4-Identify per QSI 044 6.1

• DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



• QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☒ Quality ☐ Other ☐		
Date : 17/11/16	Step #: 190	QTY Effective :	MRB (QSI042) Approval 12 9-89 7/11/16	
Description Work Order Deviation		Disposition		
Qty (4) holes reworked as shown on sheet 6 of attached drawing		holes remain within drawing tolerance per QSI 018		
		Completed By		
		Lead hand / Supervisor Approval Verification		

Root Cause		
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/W ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ OTHER : ☐

Job No: 168536
Mfg Date: 01/11/18

Start up Operation

Change No:
Operation:
Revision:
PART NO:

D5425 - 043



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K64 1K7
CANADA
TEL: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com



250 - ***DO NOT SUBMERGE TUBE IN DEOXODIZER***

270 - ***PLUG ALL CROSSBOLT SPACER HOLES PRIOR TO PRIME AND PAINT*** 1-PRIME AS PER DWG AND QSI005 4.2.1.3.3 PRIMER BATCH: _____ 2-PAINT AS PER DWG AND QSI005 4.2.2.4 PAINT BATCH: _____

290 - 1-Install FWD and AFT cap seal with sikaflex-241 / 291 B _____ Exp: _____ Start time: _____
Finish time: _____ 2-Coat all exposed hardware with LPS Procyon. Remove any excess off with MEK degreaser.
A/R LPS Procyon B _____

Job Allocations

Operation	Component Part	Required	Inventory	Allocated	Std Qty
90-Start up Operation	D6028-195 017944	1	0	0	0
230-Skidtubes	D5512-1	12	0	0	0
	D5518-1	18	0	0	0
290-HandFinish	AN3C5A	6	242	0	0
	D3672-1	6	1,743	0	0
	D5483-041	1	2	0	0
	D5484-041	1	2	0	0
	NAS1149C0332R	6	3,412	0	0

Part Specifications

Specifications could not be found.

Plex 11/16/17 8:49 AM dart.poulin.mario

• DQA: _____ Date: _____



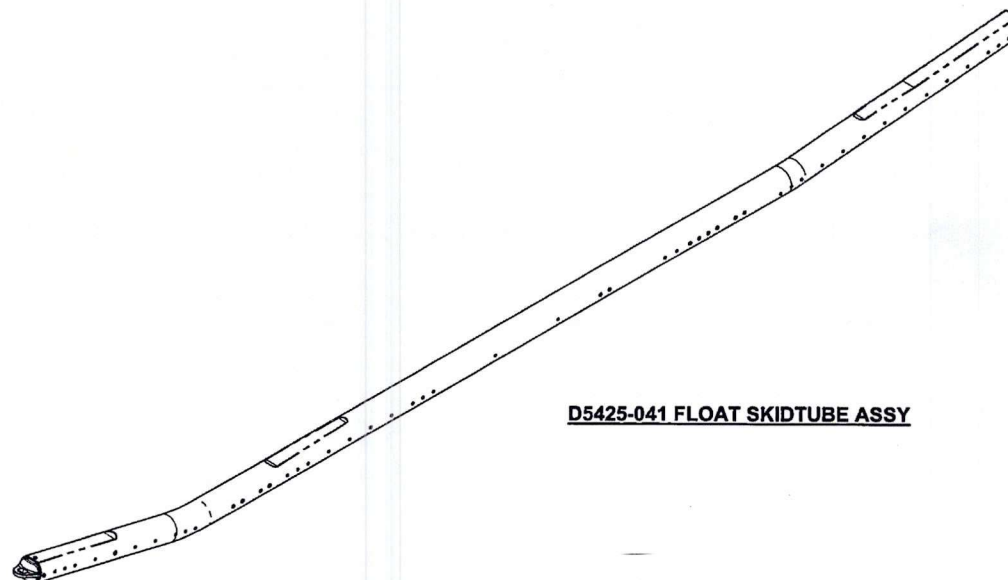
WORK ORDER NON-CONFORMANCE / UPDATE

• QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☒ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="width:15%;">Skid-tube ☒</td> <td style="width:15%;">Cross tube ☐</td> <td style="width:15%;">Water Jet ☐</td> <td style="width:15%;">Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☒	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☒	Cross tube ☐	Water Jet ☐	Engineering ☐																						
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐																						
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐																						
Large Fab ☐	Composite ☐	Supplier ☐																							
Date : _____		Step #: <u>170</u>		QTY Effective : <u>1</u>		MRB (QSI042) Approval																			
Description Work Order Deviation				Disposition																					
FWD Bend @ 7.625"				Scrap. Increases max stress in tube and effect fluct bcy orientation. 4/18/4/12																					
				Completed By 19-05-14																					
				Lead hand / Supervisor Approval Verification 18-04-11																					
				QC / QA Coordinator Approval 68 9-89 MAY 14 2019																					
Root Cause		FAULT CATEGORY																							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐																				
Design ☐	Operator ☐	☒ Bending	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐																				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	☒ Over/Under tolerance																				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐																				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐																				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐																				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐																				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐																				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐																				
Substation ☐	☒ Process Improvement	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐																				
Past Expiry Date ☐	Manufacturing Process ☐																								
Misidentified ☐	Past Due ☐	OTHER : _____																							

QTY -041	P/N	DESCRIPTION
X	D5425-041	FLOAT SKIDTUBE ASSY
6	D3672-1	WASHER
1	D5425-1	FLOAT SKIDTUBE
1	D5483-041	TOW CAP ASSY
1	D5484-041	AFT CAP ASSY
12	D5512-1	CROSSBOLT SPACER
37	D5518-1	CROSSBOLT SPACER
6	AN3C5A	BOLT
6	NAS1149C0332R	WASHER



D5425-041 FLOAT SKIDTUBE ASSY

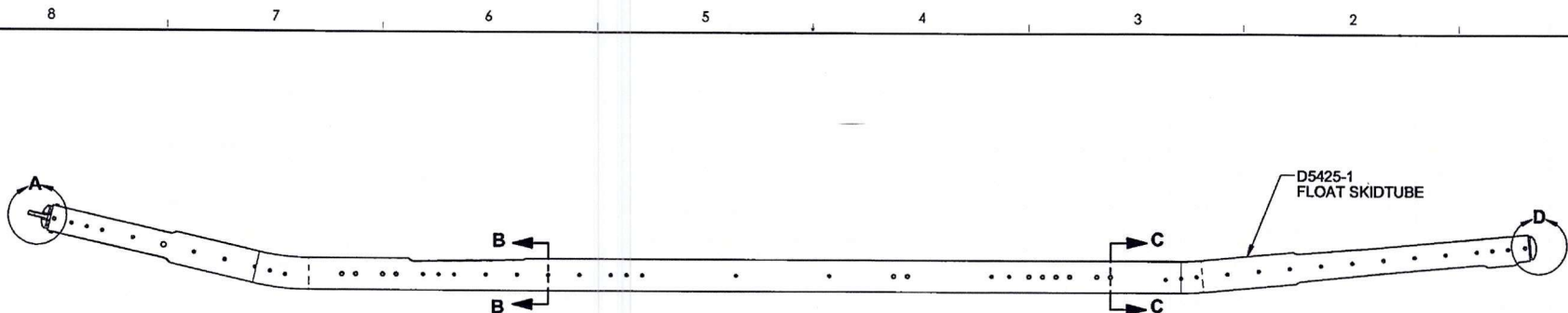
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URF17-729 NO

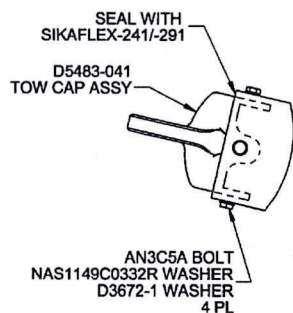
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DRAWN	NO	EUGENE, OR	
CHECKED	AJS	DRAWING NO.	REV. A
MFG. APPR.	DP	D5425	SHEET 1 OF 10
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	412 FLOAT SKIDTUBE	NTS
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ECN 17-728

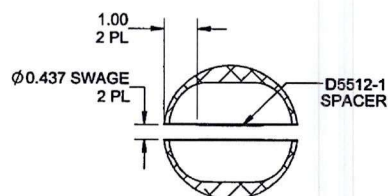
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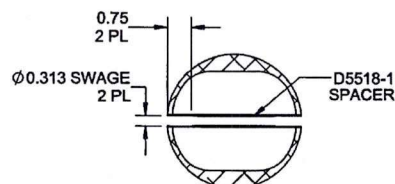


DETAIL A
SCALE 4X



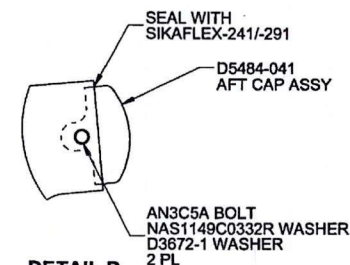
AFTER DRILLING AND BENDING, PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:
1. WET INSTALL D5512-1 SPACER PER QSI 002
2. SWAGE TO Ø0.437 X 1.00 DEEP PER QSI 002
3. TRIM / GRIND FLUSH PER QSI 002

SECTION C-C
SCALE 4X
12 PL



AFTER DRILLING AND BENDING, PERFORM THE FOLLOWING FOR Ø0.377 HOLES ONLY:
1. INSERT D5518-1 SPACER
2. SWAGE TO Ø0.313 X 0.75 DEEP PER QSI 002
3. TRIM / GRIND FLUSH PER QSI 002

SECTION B-B
SCALE 4X
37 PL



DETAIL D
SCALE 4X

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME PER DART QSI 005 4.2.1.3.3
PAINT PER DART QSI 005 4.2.2.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY PER QSI 044 6.1
- 7) WEIGHT: 54.5lbs
- 8) COAT ALL EXPOSED FASTENERS WITH LPS "LPS PROCYON"

UNDER REVIEW

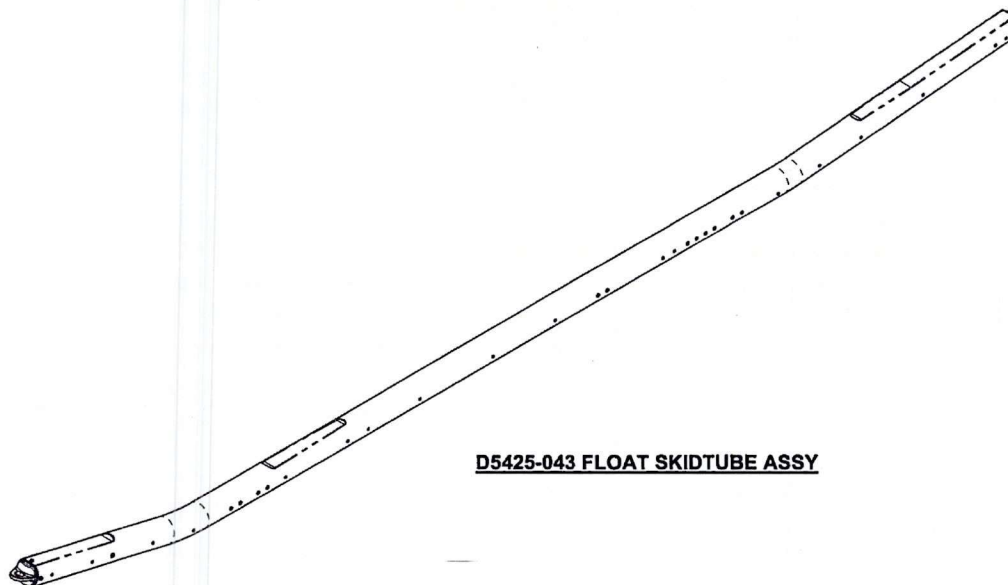
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QTY -043	P/N	DESCRIPTION
X	D5425-043	FLOAT SKIDTUBE ASSY
6	D3672-1	WASHER
1	D5425-3	FLOAT SKIDTUBE (DART TRIBAG)
1	D5483-041	TOW CAP ASSY
1	D5484-041	AFT CAP ASSY
12	D5512-1	CROSSBOLT SPACER
18	D5518-1	CROSSBOLT SPACER
6	AN3CSA	BOLT
6	NAS1149C0332R	WASHER



D5425-043 FLOAT SKIDTUBE ASSY

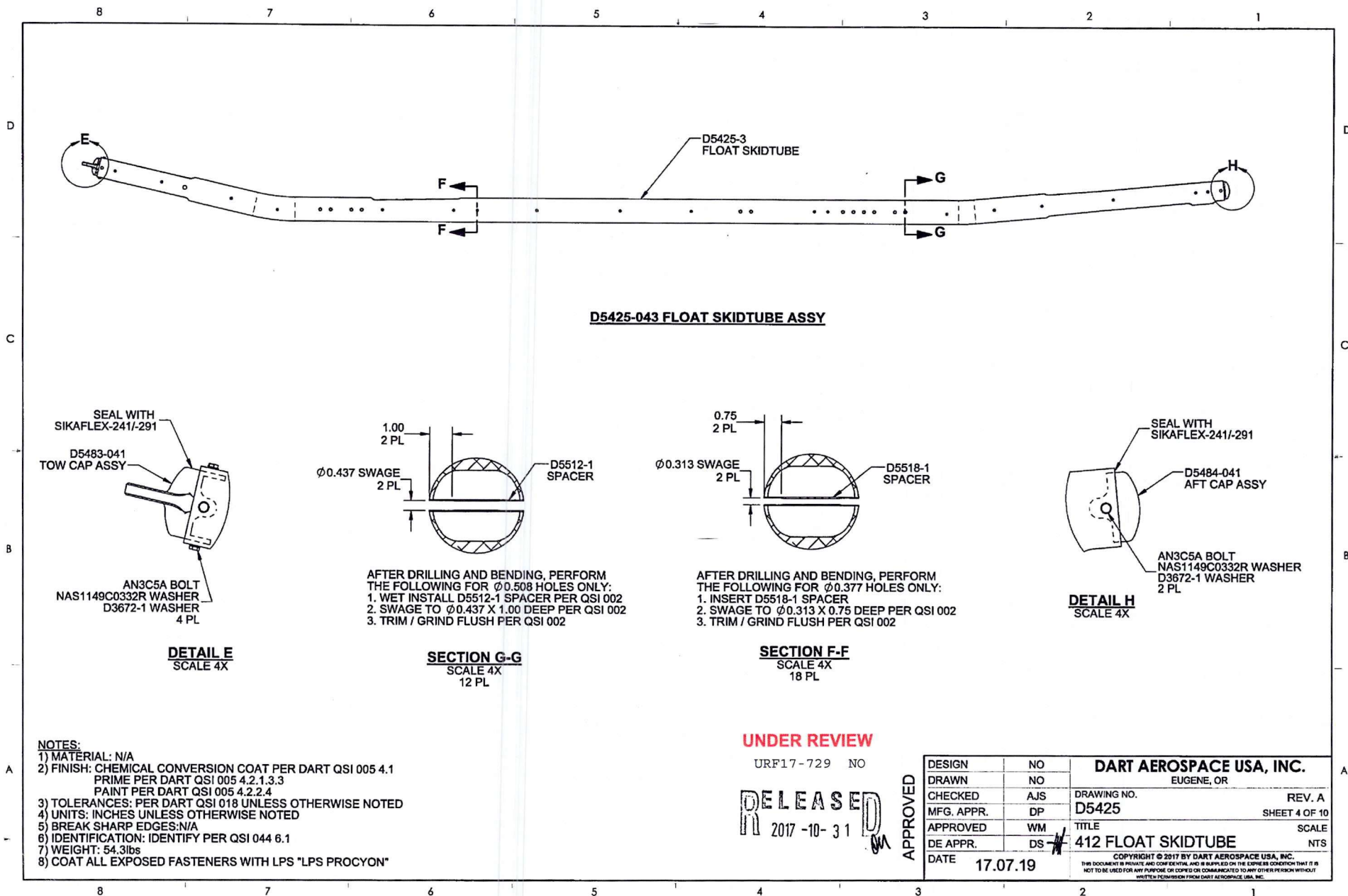
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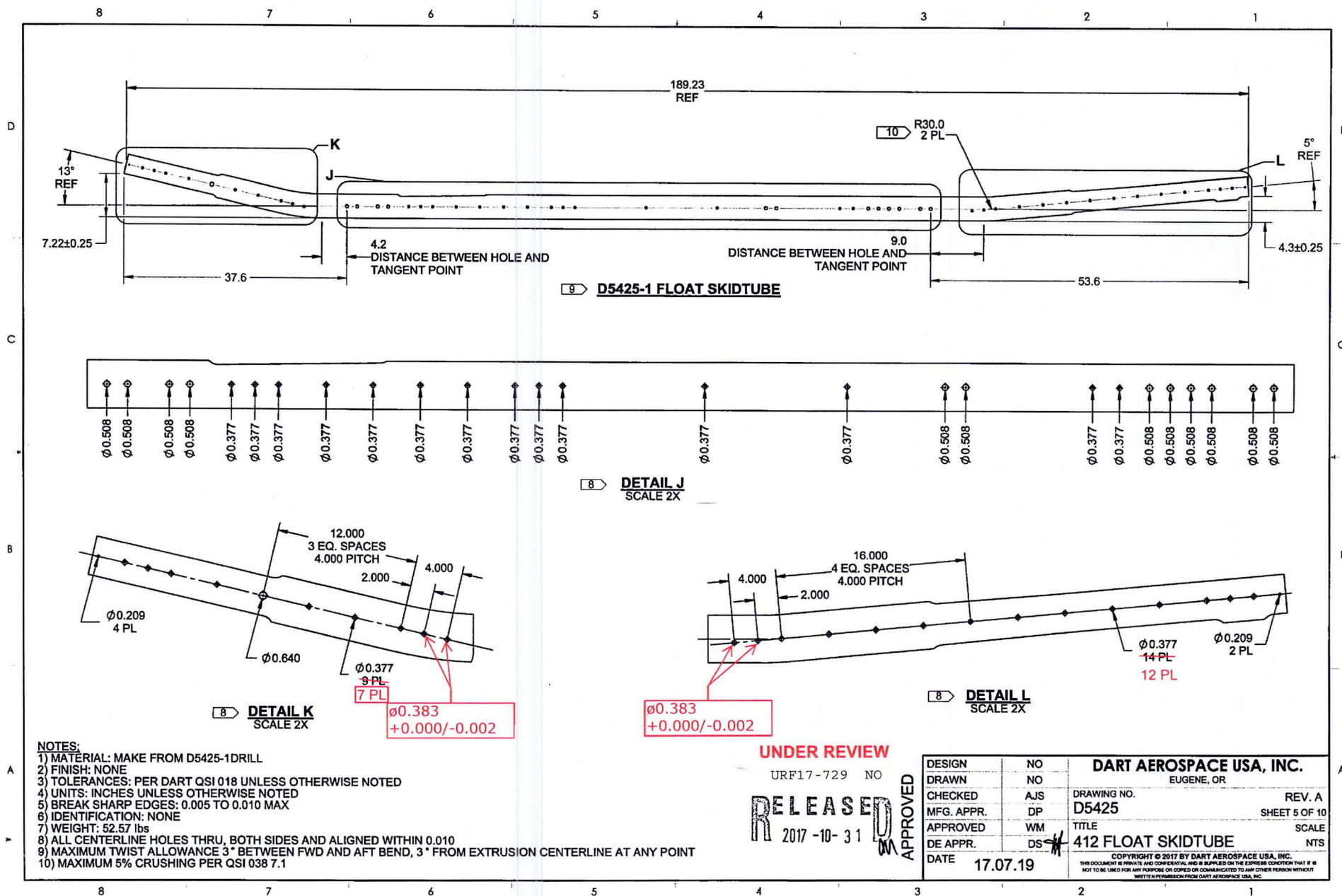
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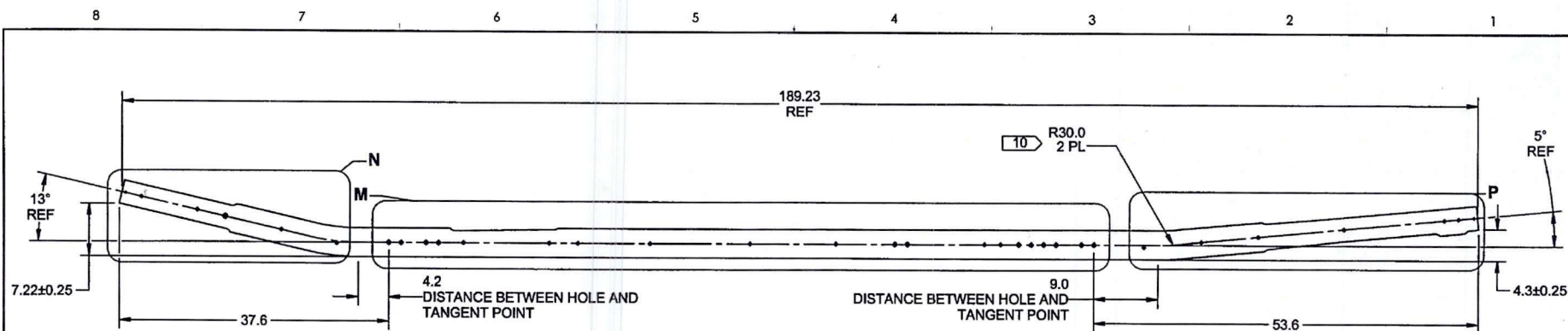
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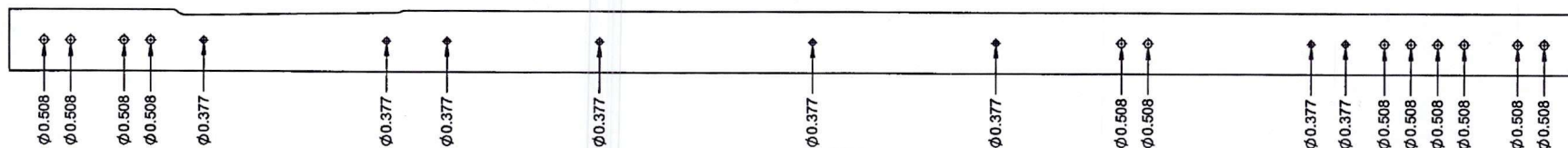
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CHECKED	AJS	DRAWING NO.	REV. A
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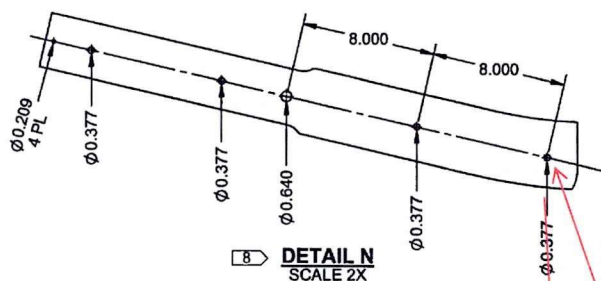




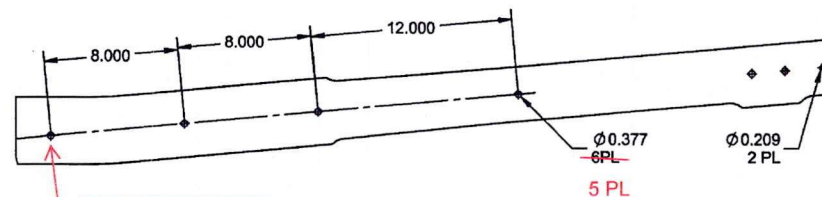
9 D5425-3 FLOAT SKIDTUBE



8 DETAIL M
SCALE 2X



8 DETAIL N
SCALE 2X



8 DETAIL P
SCALE 2X

NOTES:

- 1) MATERIAL: MAKE FROM D5425-3DRILL
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 52.57 lbs
- 8) ALL HOLES THRU, BOTH SIDES AND ALIGNED WITHIN 0.010
- 9) MAXIMUM TWIST ALLOWANCE 3° BETWEEN FWD AND AFT BEND, 3° FROM EXTRUSION CENTERLINE AT ANY POINT
- 10) MAXIMUM 5% CRUSHING PER QSI 038 7.1

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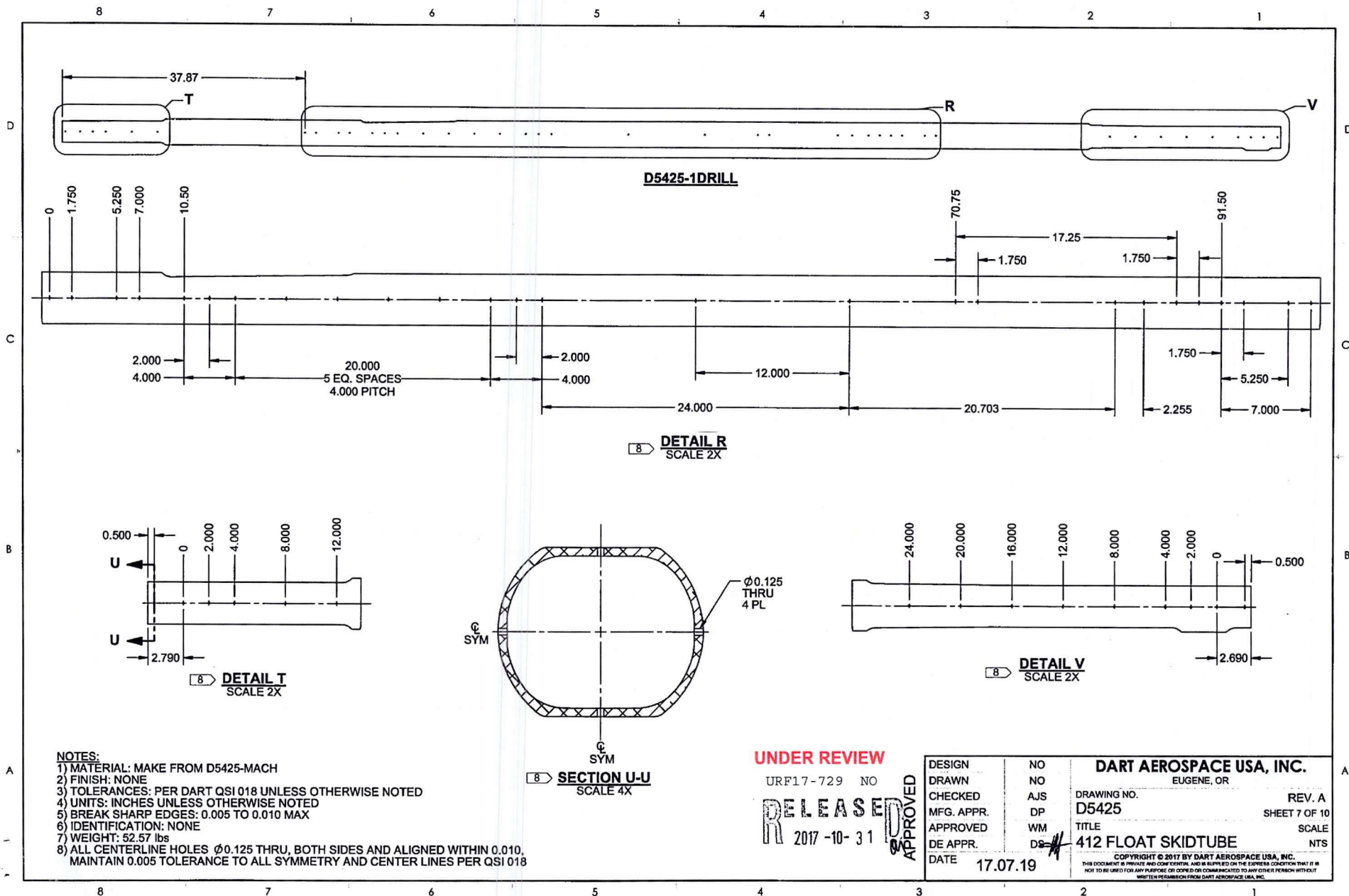
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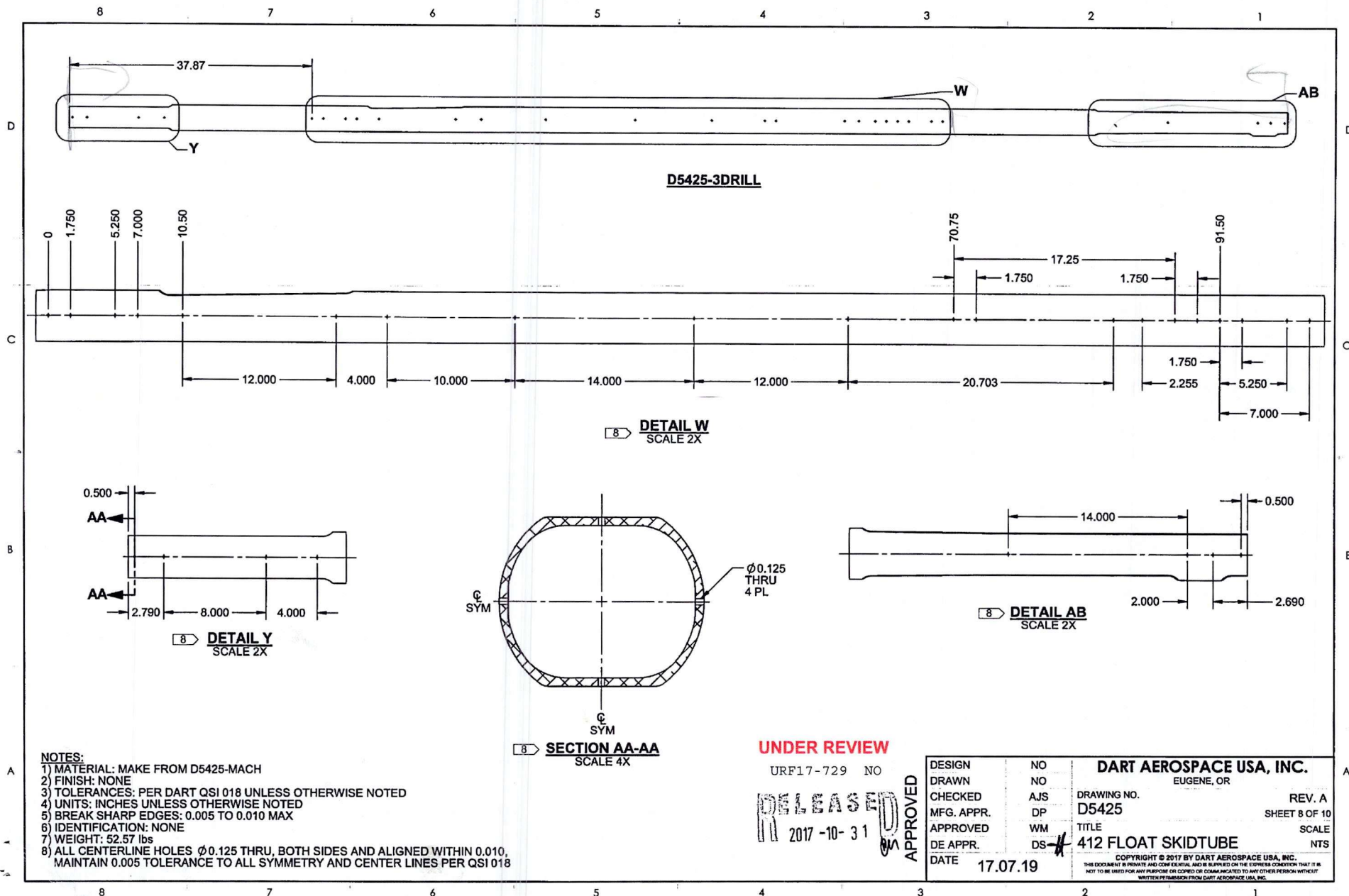
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CHECKED AJS
MFG. APPR. DP
APPROVED WM
DE APPR. DS
DATE 17.07.19

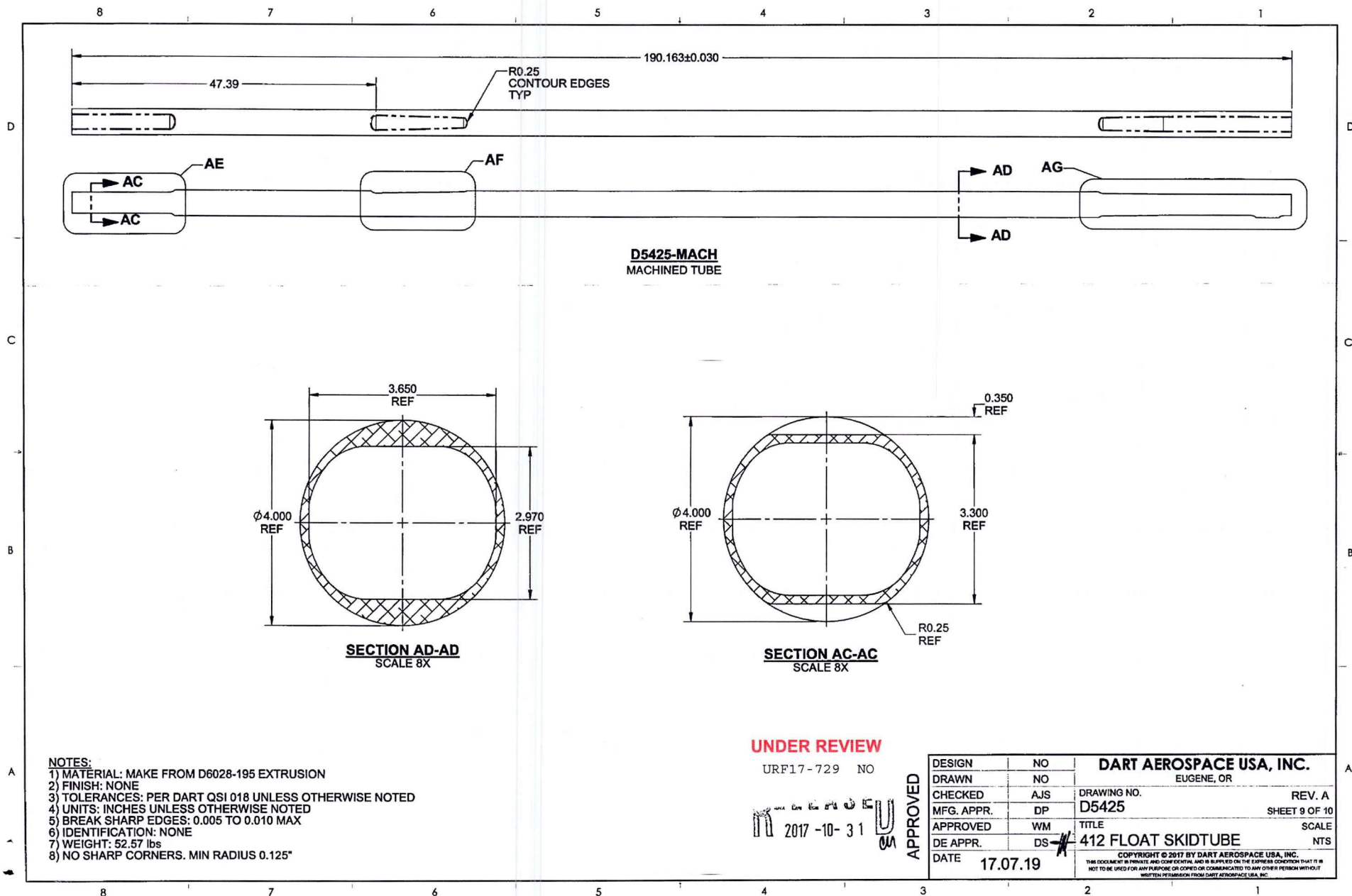
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EUGENE, OR

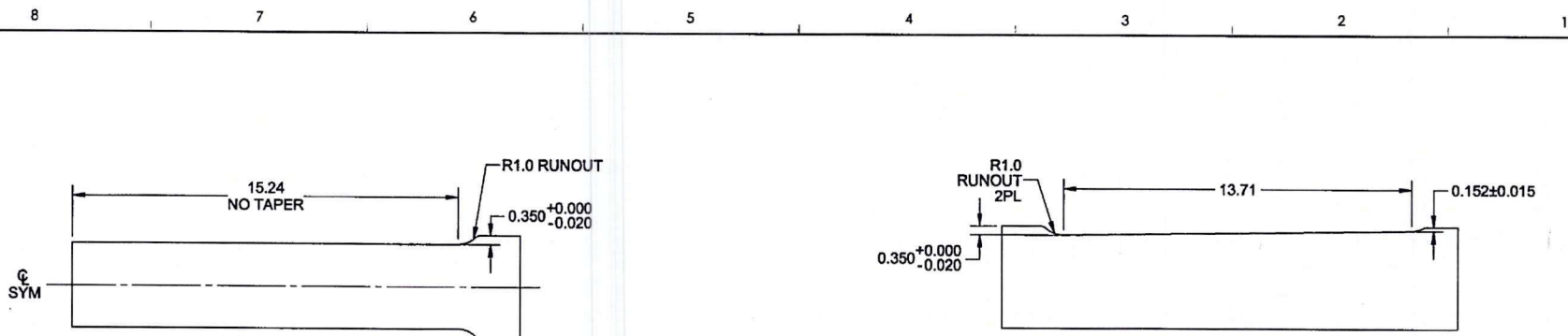
DRAWING NO. D5425
REV. A
SHEET 6 OF 10
TITLE 412 FLOAT SKIDTUBE
SCALE NTS

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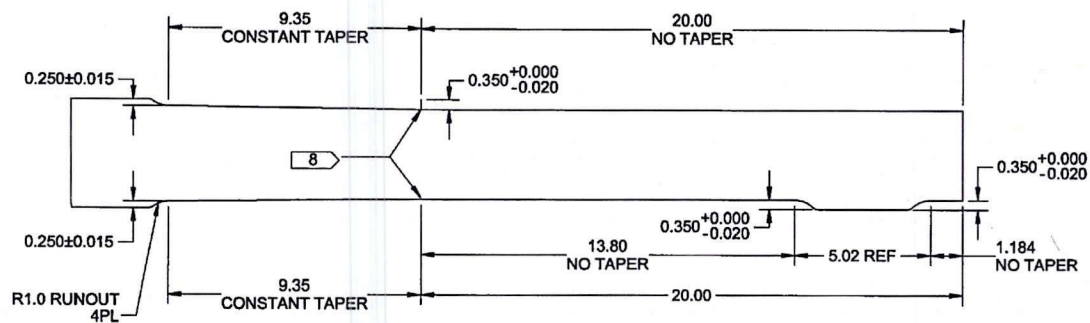






DETAIL AE
SCALE 3X

DETAIL AF
SCALE 3X



DETAIL AG
SCALE 3X

UNDER REVIEW

URF17-729 NO

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2017-10-31

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DESIGN	NO	DART AEROSPACE USA, INC.	
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CHECKED	AJS	DRAWING NO.	REV. A
MFG. APPR.	DP	D5425	SHEET 10 OF 10
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DART AEROSPACE LTD		Work Order:
Description: <u>FLOAT SKID Tube</u>		Part Number: <u>D5425-043</u>
Inspection Dwg:	Rev: <u>A</u>	Page 1 of 1

INSPECTION SHEET

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
0.500	± 0.010	0.500	✓		Kt-05	verm
2.790	± 0.010	2.790	✓		" "	" "
10.790	± 0.010	10.790	✓		CNC-02	verm.
14.790	± 0.010	14.790	✓		tape	—
43.116	± 0.010	43.116	✓		↓	↓
44.866	± 0.010	44.866	✓			
48.366	± 0.010	48.366	✓			
60.366	± 0.010	60.366	✓			
64.366	± 0.010	64.366	✓			
74.366	± 0.010	74.366	✓			
121.069	± 0.010	121.069	✓			
123.324	± 0.010	123.324	✓			
125.866	± 0.010	125.866	✓			
127.616	± 0.010	127.616	✓			
129.366	± 0.010	129.366	✓			
131.116	± 0.010	131.116	✓			
134.616	± 0.010	134.616	✓			
136.366	± 0.010	136.366	✓			
0.500	± 0.010	0.500	✓		Kt-05	verm
2.690	± 0.010	2.690	✓		" "	" "
4.690	± 0.010	4.690	✓		" "	" "
18.690	± 0.010	18.690	✓		tape	—
15.24	± 0.030	15.250	✓			
R1.0	± 0.100	1.0	✓		R-G	—
0.350	± 0.000	0.349	✓		machine	—
0.350	± 0.000	0.349	✓		—	—
R1.0	± 0.100	R1.0	✓		R-G	—
13.71	± 0.030	13.71	✓		tape	—
0.152	± 0.015	0.142	✓		machine	—
0.250	± 0.015	0.250	✓		" "	" "
9.35	± 0.030	9.35	✓		tape	—
0.350	± 0.000	0.349	✓		machine	—

Measured by: <u>1-89</u>	Checked by: <u>92</u>	QC Inspector:
Date: <u>18-01-18</u>	Date: <u>18/01/22</u>	Date:

Engineering Approval: (If necessary)	Date:
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Rev	Date	Change	Revised by	Approved
B	14.07.31	New Issue	KJ	

